

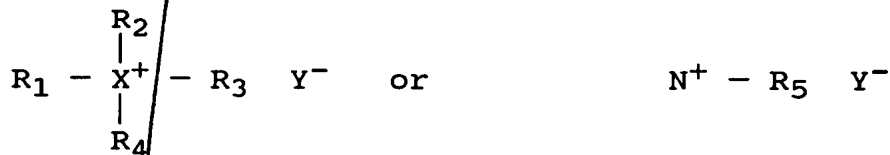
✓ Please add the following new claims:

-- 48. Apparatus, comprising:

means for enabling visual observation of proper placement of an endotracheal tube in the trachea of a patient, said means comprising:

a. an endotracheal apparatus which includes a tracheal tube defining a gas path; and

b. a CO<sub>2</sub> detector disposed within said endotracheal apparatus at a location which is in said gas path of said tube and is visible when said endotracheal tube is inserted, said detector comprising a backing and an indicator material, said indicator material comprising a support material, a pH-sensitive dye, and a phase transport enhancer for enhancing a reaction between a gas (such as) CO<sub>2</sub> and said pH-sensitive dye, said phase transport enhancer having the formula:



wherein X = N or P,

R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are selected from the group consisting of C<sub>1</sub>-C<sub>12</sub> alkyl,

C<sub>1</sub>-C<sub>4</sub> substituted alkyl wherein the substituent is a C<sub>1</sub>-C<sub>4</sub> alkyl or phenyl group, naphthyl,

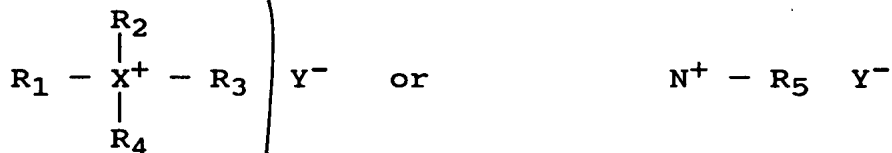
benzyl, and  
pyridine;

R<sub>5</sub> is selected from the group consisting of  
C<sub>1</sub>-C<sub>12</sub> alkyl and benzyl; and

Y<sup>-</sup> is an anion selected from the group  
consisting of hydroxide, fluoride, chloride,  
bromide, iodide, carbonate and tetrafluoroborate.

49. Apparatus as recited in claim 48, wherein said  
phase transport enhancer is selected from the group  
consisting of tetrabutylammonium hydroxide,  
tetrabutylammonium chloride, tetraethylammonium  
bromide, tetraethylammonium p-toluenesulphonate,  
phenyltrimethylammonium chloride, benzyltrimethyl-  
ammonium bromide, tetra-n-propylammonium bromide,  
benzyltriethylammonium tetrafluoroborate, n-  
dodecyltrimethylammonium bromide, tetraphenyl-  
phosphonium chloride, n-hexadecylpyridinium bromide  
and triphenylmethyltriphenylphosphonium chloride.

50. A tracheal intubation apparatus, comprising:  
means for receiving gas expired from a person; and  
a detector disposed within said means for visually  
indicating whether a substantial concentration of  
CO<sub>2</sub> is present in said gas, wherein said detector  
comprises indicator material which changes from one  
color in the presence of CO<sub>2</sub>, and changes to  
another color in response to an absence of CO<sub>2</sub>,  
said indicator material comprising a support  
material, a pH-sensitive dye, and a phase transport  
enhancer for enhancing a reaction between (a gas  
(such as) CO<sub>2</sub> and said pH-sensitive dye, said phase  
transport enhancer having the formula:



wherein X = N or P,

R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are selected from the group consisting of C<sub>1</sub>-C<sub>12</sub> alkyl,

C<sub>1</sub>-C<sub>4</sub> substituted alkyl wherein the substituent is a C<sub>1</sub>-C<sub>4</sub> alkyl or phenyl group,

naphthyl,

benzyl, and

pyridine;

R<sub>5</sub> is C<sub>1</sub>-C<sub>12</sub> alkyl or benzyl; and

Y<sup>-</sup> is an anion selected from the group consisting of hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate.

51. A tracheal intubation apparatus, comprising:  
means for receiving gas expired from a person;  
and

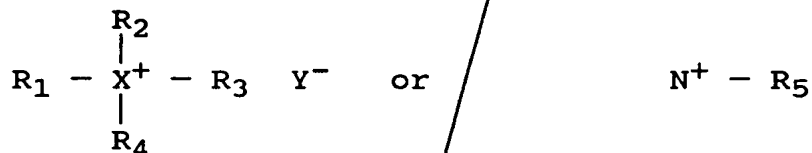
a detector disposed within said means for visually indicating whether a substantial concentration of CO<sub>2</sub> is present in said gas; wherein said detector comprises a phase transport enhancer and a dye solution applied to a support material, said phase transport enhancer enhancing a reaction between a gas such as CO<sub>2</sub> and said dye solution.

52. A breath indicator comprising:

a. means for receiving CO<sub>2</sub>;

b. a detector disposed within said means for receiving CO<sub>2</sub>, said detector comprising means for changing between a first color and a second color, said first color indicating an absence of CO<sub>2</sub> and

said second color indicating a presence of CO<sub>2</sub>, said means for changing between a first color and a second color comprising indicator material, said indicator material further comprising a dye and a phase transport enhancer for enhancing a reaction between [a gas such as] CO<sub>2</sub> and said dye, said phase transport enhancer having the formula:



wherein X = N or P,

R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are selected from the group consisting of C<sub>1</sub>-C<sub>12</sub> alkyl,

C<sub>1</sub>-C<sub>4</sub> substituted alkyl wherein the substituent is a C<sub>1</sub>-C<sub>4</sub> alkyl or phenyl group, naphthyl, benzyl, and pyridine;

R<sub>5</sub> is C<sub>1</sub>-C<sub>12</sub> alkyl or benzyl; and

Y<sup>-</sup> is an anion selected from the group consisting of hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate.

53. A breath indicator comprising:

- a. means for receiving CO<sub>2</sub>;
- b. a detector disposed within said means for receiving CO<sub>2</sub>, said detector comprising means for changing between a first color and a second color, said first color indicating an absence of CO<sub>2</sub> and said second color indicating a presence of CO<sub>2</sub>, said means for changing between a first color and a second color comprising indicator material, said

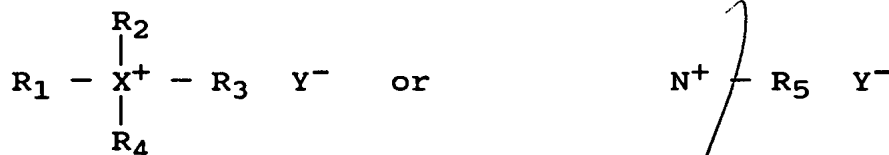
indicator material comprising a support material, a pH-sensitive dye applied to said support material, and a phase transport enhancer for enhancing a reaction between a gas such as CO<sub>2</sub> and said pH-sensitive dye.

54. A method for determining the proper placement of an endotracheal intubation device comprising the steps of

(1) inserting a device into the trachea of a patient, said device comprising:

- (a) an endotracheal apparatus which includes a tracheal tube defining a gas path; and
- (b) a CO<sub>2</sub> detector disposed within said endotracheal apparatus at a location which is in the gas path of said tube and is visible when said endotracheal tube is inserted, said detector being capable of indicating whether a substantial concentration of CO<sub>2</sub> is present in said gas, said CO<sub>2</sub> detector comprising a backing, and an indicator material, said indicator material comprising a solid phase support, a pH-sensitive dye, and a phase transport enhancer for enhancing a reaction between [a gas such as] CO<sub>2</sub> and said pH-sensitive dye, said phase transport enhancer having the formula:

B1  
(continued)



wherein X = N or P,

R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are selected from the group consisting of C<sub>1</sub>-C<sub>12</sub> alkyl,

C<sub>1</sub>-C<sub>4</sub> substituted alkyl wherein the substituent is a C<sub>1</sub>-C<sub>4</sub> alkyl or phenyl group,

naphthyl,

benzyl, and

pyridine;

R<sub>5</sub> is selected from the group consisting of C<sub>1</sub>-C<sub>12</sub> alkyl and benzyl; and

Y<sup>-</sup> is an anion selected from the group consisting of hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate; and

(2) observing a color change of the indicator which indicates the presence of CO<sub>2</sub> in the respiratory gas and thereby the proper placement of the endotracheal tube.

55. The method of claim 54, wherein said phase transport enhancer is selected from the group consisting of tetrabutylammonium hydroxide, tetrabutylammonium chloride, tetraethylammonium bromide, tetraethylammonium p-toluenesulphonate, phenyltrimethylammonium chloride, benzyltrimethylammonium bromide, tetra-n-propylammonium bromide, benzyltriethylammonium tetrafluoroborate, n-dodecyltrimethylammonium bromide, tetraphenylphosphonium chloride, n-hexadecylpyridinium bromide